

Engineer Technical
Letter 1110-1-142

1 September 1989

Engineering and Design
BLASTING VIBRATION DAMAGE AND NOISE
PREDICTION AND CONTROL

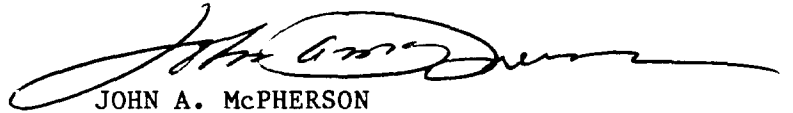
1. Purpose. This letter contains criteria and guidance for assessing the ground vibrations and noise resulting from construction blasting and their effects on adjacent structures, foundations, and individuals.
2. Applicability. This letter is applicable to all HQUSACE/OCE elements and field operating activities (FOA) having military construction and civil works design or construction responsibility.
3. References.
 - a. EM 385-1-1 Safety and Health Requirements Manual.
 - b. EM 1110-1-1802 Geophysical Exploration.
 - c. EM 1110-1-1804 Geotechnical Investigations.
 - d. EM 1110-2-3800 Systematic Drilling and Blasting for Surface Excavations.
4. General. Since EM 1110-2-3800 was written, substantial progress has been made by the engineering profession in improving both the theoretical basis and the empirical data base on blasting vibrations. Enclosure 1 updates CE technical guidance to include these new results. The construction contractor is usually required by project technical or safety specifications to submit blasting plans to the resident engineer for record. Areas of concern should include blasting safety, damage to structures under construction, damage to existing structures on and off the project site caused by ground vibrations and/or airblast, flyrock, noise effects on and off the project site, and damage to or loosening of adjacent rock to be used as a structural foundation. An understanding of the structural geology of the project site obtained using methods given in EM 1110-1-1804 is critical to the prevention of damage to foundation rock. EM 385-1-1 treats the subject of blasting safety. Other references are noted in the bibliography in Enclosure 1. Blasting in connection with seismic surveys (EM 1110-1-1802), although usually involving small explosive charges, should be planned to prevent excessive blasting vibration or noise damage.
5. Action to be taken. The guidance contained in Enclosure 1 should be used in place of criteria contained in EM 1110-2-3800, Chapter 7.

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6. Implementation. This letter will have routine application as defined in paragraph 6c, ER 1110-345-100.

FOR THE DIRECTOR OF CIVIL WORKS:

Encl

A handwritten signature in black ink, appearing to read 'John A. McPherson', with a large, stylized flourish extending to the right.

JOHN A. MCPHERSON
Acting Chief, Engineering Division
Directorate of Civil Works